

Claims

1. A transgenic non-mouse non-human animal whose somatic and germ line cells contain at least one copy of a transgene comprising (1) a transcriptional start site; (2) a promoter operably linked to the transcriptional start site; and (3) an enhancer operably linked to the promoter, the enhancer comprising the nucleotide sequence of SEQ ID NO:1,

wherein the transgenic animal expresses a transcript driven by the promoter, the level of expression in at least one cell type of the animal being proportionally dependent on the copy number of the transgene.

2. The transgenic animal of claim 1, wherein the animal is selected from the group consisting of pig, rat, cow, rabbit, goat, guinea pig, prarie baboon, squirrel, monkey, chimpanzee, bird, frog, toad, chicken, turkey and sheep.

3. The transgenic animal of claim 2, wherein the animal is a pig.

4. The transgenic animal of claim 3, wherein the somatic and germ line cells contain more than 5 copies of the transgene.

5. The transgenic animal of claim 4, wherein the somatic and germ line cells contain more than 15 copies of the transgene.

6. The transgenic animal of claim 5, wherein the promoter drives transcription of a mRNA encoding a polypeptide, the transcription beginning from the transcriptional start site.

7. The transgenic animal of claim 6, wherein the polypeptide is a growth hormone.

8. The transgenic animal of claim 7, wherein the promoter is a ζ -globin promoter, and the at least one cell type is a erythroblast.

9. The transgenic animal of claim 8, wherein the enhancer comprises SEQ ID NO:2.

10. The transgenic animal of claim 9, wherein the enhancer comprises SEQ ID NO:3.

11. A method of expressing a transcript in a non-mouse, non-human animal, the method comprising administering to the animal a nucleic acid comprising (1) a transcriptional start site for the transcript; (2) a promoter operably linked to the transcriptional start site; and (3) an enhancer operably linked to the promoter, the enhancer comprising the DNA sequence of SEQ ID NO:1 or the RNA equivalent thereof.

12. The method of claim 11, wherein the animal is selected from the group consisting of pig, rat, cow, rabbit, goat, guinea pig, prarie baboon, squirrel, monkey, chimpanzee, bird, frog, toad, chicken, turkey and sheep.

13. The method of claim 11, wherein the nucleic acid is administered via a viral expression vector.

14. The method of claim 11, wherein the transcript is a mRNA encoding a polypeptide.
15. The method of claim 14, wherein the polypeptide is a growth hormone.
16. The method of claim 11, wherein the promoter is a ζ -globin promoter.
17. The method of claim 11, wherein the enhancer comprises SEQ ID NO:2 or the RNA equivalent thereof.
18. The method of claim 11, wherein the enhancer comprises SEQ ID NO:3 or the RNA equivalent thereof.
19. The method of claim 11, wherein the nucleic acid further comprises a transcriptional termination signal.
20. The method of claim 19, wherein the transcriptional termination signal is a polyadenylation signal.